

DEPARTMENT HEALTH

# Office Memorandum

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US EPA RECORDS CENTER REGION 5



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SUBJECT: Remedies Immediately Needed for St. Louis Park Water Supply

Below is a list of steps which could be undertaken in the coming months to rectify the shortage of safe drinking water which the City of St. Louis Park is likely to experience because of contamination of groundwater caused by the former Reilly Tar creosote operation. The list includes both measures to relieve the water shortage which is anticipated for the coming summer and measures which should be undertaken now, to retard the spread of the contamination to nearby water supplies. A shortage of water for the coming summer is anticipated because five of the City's wells (nos. 7 and 9 at Cedar Lake Road and Nevada; nos. 10 and 15 at 29th and Idaho; no. 4 at 41st and Natchez) have been shut down due to the fact that water from those wells contained quantities of PAH compounds which MDH thought were unsafe.

An important consideration which must be taken into account when evaluating the tasks enumerated below, relates to the matter of treatment versus containment. While we are convinced on the one hand that treatment is necessary for the short term, we do not want to focus on treatment at the expense of containment and removal. All of the following steps should be undertaken immediately, if the City is to: 1) provide an adequate summer supply, and 2) prevent deterioration of wells now in use.

1. a) provide all necessary services and equipment (including engineering design, labor and construction) to permit the City to hookup to the Minneapolis water supply and reimburse the City for all of the water which it must purchase from Minneapolis; or
- b) restart wells nos. 10 and 15 and treat these with powdered activated carbon, to safe drinking levels. Only these two are amenable to this kind of treatment, since they are connected to the iron removal plant, where the carbon could also be removed. Current estimated cost of equipment for each well is approximately \$10,000. Operation costs would be extra.
2. Well Abandonment Program (private wells)

## Current Status

Twenty-four wells have been sealed, recompleted, and/or investigated at a cost of \$70,000.

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## Further Work

Further abandonment work will involve 73 wells known to be present or reported in the area. These breakdown as follows:

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- a) 9 wells - Sufficient information is available on these production wells to let bids for redrilling and sealing.

Estimated cost = \$150,000

- b) 17 wells - Additional information is needed on these wells. These wells must be located, field inspected, cleaned, surveyed by downhole camera, sampled and analyzed. It is difficult to estimate costs due to insufficient information. However, once a well has been located, abandonment usually costs \$1,000-\$5,000.

Estimated range of total costs  
\$17,000-\$ 85,000

- c) 23 wells - These wells are located outside the original U.S.G.S. study area. Some of these wells may require redrilling or sealing if the U.S.G.S. study identifies contamination beyond the limits of its study area. Again, the same costs apply as above, excluding location costs.

Estimated range of total costs  
\$23,000-\$115,000

- d) 24 wells - These wells have been reported or located since the abandoned well survey was conducted. The minimum costs for these would be:

Estimated range of total costs  
\$24,000-\$120,000

- e) Unknown or unreported wells may be contributing to groundwater contamination and the current search program must be continued.

The minimum costs outlined here total \$435,000. However, many wells are located under buildings or may be filled with debris which makes them difficult to locate and repair. These factors can increase the above cost estimates by almost an order of magnitude. Thus, the figures outlined above are conservative.

3. Initiate studies of various methods of treatment for removal of PAHs from drinking water to determine which method is most suitable for the City's purposes. The study would include both a literature review and bench tests. This is essentially the same study as the City is willing to contract out for \$25,000. If the City does let a contract for the study, Reilly could be made to reimburse the City for its costs.
4. Provide portable-unit, powdered activated carbon treatment for wells nos. 7 and 8. Since these are not connected with any treatment plant, all treatment and removal must be done at the well head before the water enters the distribution system.
5. U.S.G.S. Study: This study started July 1, 1978, and involves a determination of extent and magnitude of contamination in the glacial and bedrock aquifers and an analysis of the geology and hydrology of the area. This effort is scheduled for completion in June, 1980. However, further information should be developed as the consultant develops a remedial plan and further monitoring would be extremely useful to better assess contaminant behavior. Some preliminary estimates for further work include:
  - a) Continuation of the water quality monitoring program which involves measuring water quality and piezometric levels in at least 115 wells.

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- b) Implementation of a major, full-scale pumping test in each of the two drift aquifers. This is necessary for effective design of a barrier well system, for assessing possible subsidence problems, and for determining the possible magnitude of contaminant movement. This project would include installation of monitoring wells and water level recorders.

\$35,000

- c) Placement of a test core for a relief well immediately adjacent to Well W23, the "Hinckley" well on the former Republic Creosote site. This core will be placed to the bottom of the Prairie-du-Chien Formation and would be used for thorough evaluation of contamination in the Prairie-du-Chien from Well 23 and in monitoring clean-up activities on Well 23. For instance, it may be used to remove contaminants that may be mobilized by cleaning Well 23.

\$61,000

6. Support and expand current testing programs and increase the analytic capability for adequate assessment and monitoring of the St. Louis Park contamination. This program involves analyses of private, commercial, and municipal wells in St. Louis Park and adjacent communities. The program conducted to date has been restricted, because of staff and equipment limitations. Most of these analyses have involved PAH determinations. The requirements outlined below are for implementing an extensive and thorough field analytical program.

a) Sample Analyses

- 1) PAH compounds - This would involve sampling approximately 120-150 wells monthly, with some of these being sampled more frequently. This would involve 30-48 samples/week at a cost of \$60.00 per sample.

(\$90,000-\$144,000/yr.)

- 2) Priority pollutants (volatile organics, acid and base/neutral organics) - This would involve a less intensive sampling program, on the order of 100 samples (at \$175/sample)

(\$17,500/yr.)

b) Supplies

solvents, columns,  $\text{Na}_2\text{SO}_4$ , etc.

\$8,000.00

c) Equipment

- 1) One 31,000 compound library on tape - This is for rapid identification of gas chromatograph/mass spectrophotometer analyses.

\$750.00

- 2) One liquid concentrator and gas chromatograph unit - This is for determination of volatile fractions.

\$3,500.00 &amp; \$8,000.00

- 3) One scanning fluorescent detector - This is for enhanced PAH determination.

\$12,000

d) Staffing

One chemist - analyses and identification

\$12,000

One chemist aide - extraction and preparation

\$10,000

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If this work is contracted out to private labs, 5% should be added to the above cost estimates (other than equipment).

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7. Determine whether the contaminated wells, because they have been shut off, are contributing contamination to the pumping wells which have not yet shown any contamination. We have reason to suspect that such a process may have resulted in the contamination of well no. 4, which was not contaminated when wells nos. 7, 9, 10 and 15 were shut down. If the shutdown is determined to be contributing to the contamination of wells which were heretofore clean, the wells which have been shut down should be restarted and their waters treated and discharged to an appropriate sewer or surface water body.
8. On the basis of existing information, construct and pump as many barrier wells as are presently known to be necessary, i.e., wells near the most heavily contaminated soils, based on some Barr study data.

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